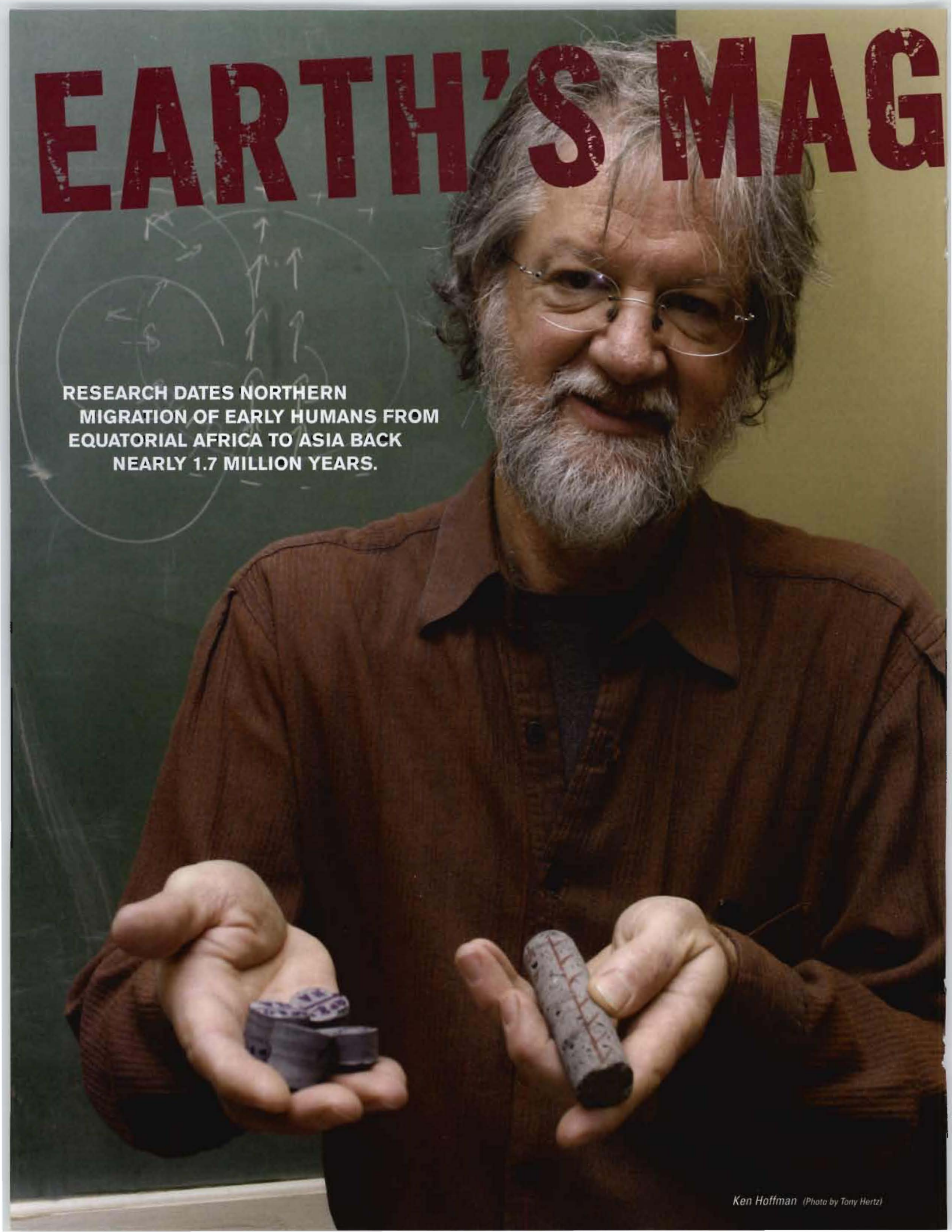
EARTH'S MAG

RESEARCH DATES NORTHERN MIGRATION OF EARLY HUMANS FROM EQUATORIAL AFRICA TO ASIA BACK NEARLY 1.7 MILLION YEARS.



Ken Hoffman (Photo by Tony Hertz)

NETIC FIELD PULLS RESEARCHER IN

BY STACIA MOMBURG

A pioneer in the study of reversals of Earth's magnetic field, Cal Poly Physics Professor Kenneth Hoffman was part of a team of scientists shedding light on migration patterns followed by prehistoric man more than 1.5 million years ago.

The research findings were featured in the prestigious journal *Nature* in an article about new evidence on the earliest human presence at high northern latitudes in northeast Asia.

The team's research dates the northern migration of early humans from equatorial Africa to Asia back nearly 1.7 million years. This is the earliest find anywhere near this area, helping scientists understand the migration of people over time, Hoffman said.

He and the other researchers studied the magnetism held by ancient sediments that were found to contain primitive tools and bones in an uplifted area that was once a lake near Beijing in northern China.

Lake sediments become magnetized by Earth's field as they are deposited, offering a "fossil record" of magnetic directional changes that can later be analyzed by paleomagnetists. Using what is known about the timing of reversals in polarity of the field – a phenomenon that causes the North and South magnetic poles to exchange positions – Hoffman said they were able to determine the age of the artifacts, and hence, the time when early humans migrated to that part of the world.

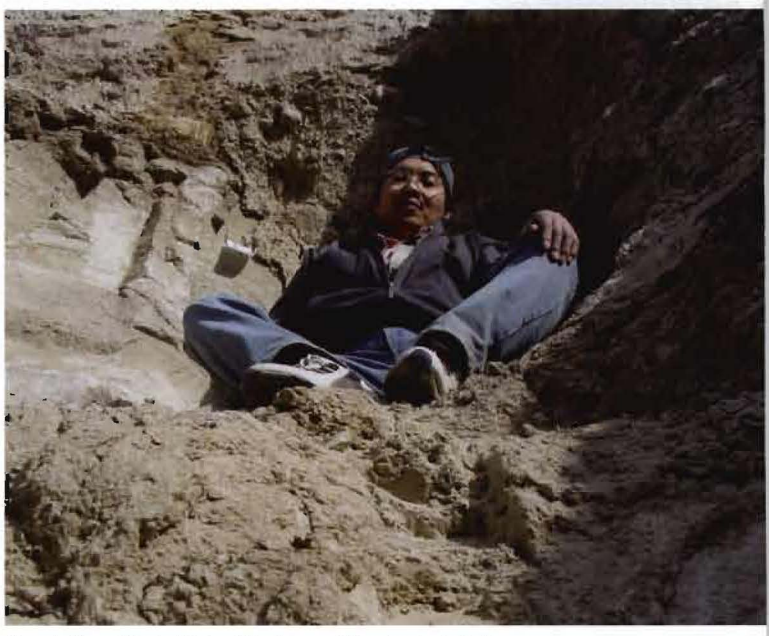
Hoffman's most recent article, published in the Sept. 30, 2004, issue of *Nature*, was a collaboration involving Rixiang Zhu of the Institute of Geology and Geophysics at the Chinese Academy of Sciences in Beijing, Rick Potts from the Smithsonian Institution in Washington, D.C., and scientists from the Hebei Province Institute of Cultural Relics in Shijiazhuang.

Among his numerous journal articles, Hoffman has authored or co-authored nine papers that have appeared in *Nature* and has published several more with Chinese paleomagnetists. The Institute of Geophysics in Beijing has made him an honorary professor.

At Cal Poly, where he has taught for 30 years, he works both as a researcher and professor. He has received numerous research grants from the National Science Foundation.

He also takes students on trips to sample lava flow sequences at various locations around the world, studying the process by which Earth's magnetic field manages to reverse its polarity.

In 1988 Hoffman was the first Cal Poly professor to be awarded the systemwide Outstanding Professor Award presented by The California State University trustees. In 1992 he was elected Fellow of the American Geophysical Union for his work on magnetic field reversals.



Yongxin Pan of the Institute of Geology and Geophysics in Beijing

Richard Frankel, chair of the Physics Department, praised Hoffman as a "big believer" in the role of undergraduate research. "He has shown all of us that it is possible to be a good teacher and a good researcher," Frankel said. "There's a big difference between a lab course and real-life experience. The possibilities are open-ended." ■